N3172B.AR.003154
NASD VIEQUES
5090.3a

VALIDATED DATA PACKAGE, AOCE-1, VIEQUES ISLAND PUERTO RICO

5/18/2015

DATAQUAL ENVIRONMENTAL SERVICES, LLC

DataQual

Environmental Services, LLC

CH2M HILL
2411 Dulles Corner Park
Suite 500
Herndon, VA 20171

May 18, 2015
SDG# ACOE-1, Empirical
Vieques Island, Puerto Rico- AOC-E Post ROD LTM

Dear Mr. Zamboni,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # ACOE-1. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Methods (SOP HW-33 Rev. 3 , March 2013 and SOP HW-35 Rev. 2, March 2013), and professional judgment. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA	SVOA
VWAE-MW03-0315	D1412.D	water	X	X
VWAE-TB01-033115	D1410.D	water	X	
VWAE-MW04-0315	D1433.D	water	X	X
VWAE-MW01-0335	D1414.D	water	X	X
VWAE-MW01P-0315	D1434.D	water	X	X
VWAE-EB01-033115-GW	D1411.D	water	X	X
VWAE-MW08-0415	D1435.D	water	X	X
VWAE-MW05-0415	D1436.D	water	X	X
VWAE-EB01-040115-GW	D1432.D	water	X	X
VWAE-TB01-040115	D1431.D	water	X	
VWAE-MW07-0415	C2261.D	water	X	X
VWAE-TB01-040615	C2257.D	water	X	
VWAE-EB-040615-GW	C2258.D	water	X	X
VWAE-MW03-0315 MS	D1412.D MS	water	X	X
VWAE-MW03-0315 MSD	D1412.D MSD	water	X	X

The following quality control samples were provided with this SDG: sample VWAE-EB01-033115-GW, VWAE-EB01-040115-GW and VWAE-EB-040615-GW - equipment blank; sample VWAE-TB01-033115, VWAE-TB01-040115 and VWAE-TB01-040615- trip blank; sample VWAE-MW01P-0315- field duplicate of sample VWAE-MW01-0315.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Sample Condition *
- Technical Holding Times *
- GC/MS Tuning *
- Initial/Continuing Calibrations
- Blanks *
- Internal Standards *
- Surrogate Recoveries
- Laboratory Control Samples *
- Matrix Spike Recoveries *
- Matrix Duplicate RPDs *
- Field Duplicates
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page. Please note that when a compound or analyte is flagged due to blank contamination the BL qualifier code takes precedence over all other qualifier codes except a code that explains rejected data.

VOA

One of the samples exhibited a low surrogate recovery that resulted in qualifications to the data.

SVOA

Due to high %D in the continuing calibration, qualifications were added to the data.

The field duplicate pair exhibited non-comparable results that added qualifications to the data.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required.

Technical Holding Times

According to chain of custody records, sampling was performed on 3/31-4/615 and samples were received at the laboratory 4/1-7/15. All sample preparation and analysis was performed within Region II and/or method holding time requirements.

Initial/Continuing Calibration

SVOA

Calibration standards exhibited %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	%D	Samples	Q Flag	Qual Code
CC 4/7/15	naphthalene	26.67	VWAE-MW08-0415, VWAE-EB01-040115-GW, VWAE-MW05-0415	J/UJ	CCH

Surrogates

VOA

Sample VWAE-MW03-0315 exhibited low recovery for dibromofluoromethane at 15.6% (QC limit 85-115%). The MS/MSD was associated with this sample and also exhibited low reveries for this surrogate no re-analysis was performed. Qualify results as estimated (J/UJ), qualifier code SSL.

Field Duplicates

SVOA

Sample VWAE-MW01-0315 and field duplicate VWAE-MW01P-0315 did not exhibit comparable results for 2-methylnaphthalene with 200% RPD; therefore results for this compound were qualified as estimated (J/UJ) in both samples, qualifier code: FD.

Identification/Quantitation

SVOA

Samples VWAE-MW07-0415 and VWAE-EB01-040615-GW were re-extracted and re-analyzed due to non-compliant LCS recoveries naphthalene. The associated LCSD exhibited recovery within criteria for naphthalene. The samples were re-extracted out of holding time and therefore were excluded.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q flag	Q Code
VWAE-MW03-0315	all results	+/-	J/UJ	SSL

SVOA

Sample ID	Compound	Results	Q flag	Q Code
VWAE-MW08-0415, VWAE-EB01-040115-GW, VWAE-MW05-0415	naphthalene	+/-	J/UJ	CCH
VWAE-MW01-0315, VWAE-MW01P-0315	2-methylnaphthalene	+/-	J/UJ	FD
VWAE-MW07-0415RE, VWAE-EB01-040615-GWRE	all results	+/-	exclude	RE

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the RL (2X sample RL for common laboratory contaminants) when the blank value is less than the RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U*	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is qualified as non-detect U at the reported concentration.
RL**	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is changed to the RL and qualified as non-detect U.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the RL* or at the reported concentration**, when the ICB/CCB/PB result is less or greater than the RL.

Glossary of Qualification Flags and Abbreviations, continued

R -	Sample result is greater than the RL and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the RL.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the RL.
J/UJ -	Sample result is less than 10X RL when blank result is below the negative RL.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.

Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the RL* or at the reported concentration**, when the FB result is less or greater than the RL.
R -	Sample result is greater than the RL and less than the FB value when the FB value is greater than the RL.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the RL.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

General Abbreviations

RL	reporting limit
PQL	practical quantitation limit
IDL	instrument detection limit
MDL	method detection limit
CRDL	contract required detection limit
CRQL	contract required quantitation limit
+	positive result
-	non-detect result

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High moisture content

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-1
Client ID: VWAE-MW03-0315
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1412.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 02-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160660

Analysis Date: 02-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	~~U~~ UJ SSL	0.50	ug/L	1	1	1.0	0.36	0.50
Benzene	~~UMM~~	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	~~U~~	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	~~U~~	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	~~U~~	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	~~U~~	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		91.2	%					
Toluene-d8		85.5	%					
1,2-Dichloroethane-d4		87.3	%					
Dibromofluoromethane	*	15.6	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-2
Client ID: VWAE-TB01-033115
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1410.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 02-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160660

Analysis Date: 02-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		95.7	%					
Toluene-d8		88.5	%					
1,2-Dichloroethane-d4		89.6	%					
Dibromofluoromethane		99.7	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-3RA
Client ID: VWAE-MW04-0315
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1433.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 06-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160803

Analysis Date: 06-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether		14	ug/L	1	1	1.0	0.36	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		86.9	%					
Toluene-d8		94.0	%					
1,2-Dichloroethane-d4		88.3	%					
Dibromofluoromethane		88.3	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-4
Client ID: VWAE-MW01-0315
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1414.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 02-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160660

Analysis Date: 02-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether		23	ug/L	1	1	1.0	0.36	0.50
Benzene		2.1	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane		4.4	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		101.	%					
Toluene-d8		92.8	%					
1,2-Dichloroethane-d4		96.8	%					
Dibromofluoromethane		106.	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-5RA
Client ID: VWAE-MW01P-0315
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1434.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 06-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160803

Analysis Date: 06-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether		21	ug/L	1	1	1.0	0.36	0.50
Benzene		1.9	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane		3.9	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		87.9	%					
Toluene-d8		93.6	%					
1,2-Dichloroethane-d4		84.4	%					
Dibromofluoromethane		87.1	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-6
Client ID: VWAE-EB01-033115-GW
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1411.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 02-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160660

Analysis Date: 02-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		92.8	%					
Toluene-d8		86.7	%					
1,2-Dichloroethane-d4		87.5	%					
Dibromofluoromethane		96.4	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2039-1
Client ID: VWAE-MW08-0415
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1435.D

Sample Date: 01-APR-15
Received Date: 02-APR-15
Extract Date: 06-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160803

Analysis Date: 06-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		85.0	%					
Toluene-d8		94.1	%					
1,2-Dichloroethane-d4		83.0	%					
Dibromofluoromethane		87.1	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2039-2
Client ID: VWAE-MW05-0415
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1436.D

Sample Date: 01-APR-15
Received Date: 02-APR-15
Extract Date: 06-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160803

Analysis Date: 06-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether		350	ug/L	1	1	1.0	0.36	0.50
Benzene		9.8	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	J	0.85	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		85.2	%					
Toluene-d8		92.7	%					
1,2-Dichloroethane-d4		86.6	%					
Dibromofluoromethane		91.0	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2039-3
Client ID: VWAE-EB01-040115-GW
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1432.D

Sample Date: 01-APR-15
Received Date: 02-APR-15
Extract Date: 06-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160803

Analysis Date: 06-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		85.2	%					
Toluene-d8		92.3	%					
1,2-Dichloroethane-d4		86.7	%					
Dibromofluoromethane		91.1	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2039-4
Client ID: VWAE-TB01-040115
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: D1431.D

Sample Date: 01-APR-15
Received Date: 02-APR-15
Extract Date: 06-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160803

Analysis Date: 06-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		86.5	%					
Toluene-d8		95.0	%					
1,2-Dichloroethane-d4		85.3	%					
Dibromofluoromethane		92.2	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2122-1
Client ID: VWAE-MW07-0415
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: C2261.D

Sample Date: 06-APR-15
Received Date: 07-APR-15
Extract Date: 13-APR-15
Extracted By: EME
Extraction Method: SW846 5030
Lab Prep Batch: WG161157

Analysis Date: 13-APR-15
Analyst: EME
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		98.0	%					
Toluene-d8		110.	%					
1,2-Dichloroethane-d4		120.	%					
Dibromofluoromethane		108.	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2122-2
Client ID: VWAE-TB01-040615
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: C2257.D

Sample Date: 06-APR-15
Received Date: 07-APR-15
Extract Date: 13-APR-15
Extracted By: EME
Extraction Method: SW846 5030
Lab Prep Batch: WG161157

Analysis Date: 13-APR-15
Analyst: EME
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		98.5	%					
Toluene-d8		111.	%					
1,2-Dichloroethane-d4		116.	%					
Dibromofluoromethane		106.	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2122-3
Client ID: VWAE-EB01-040615GW
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: C2258.D

Sample Date: 06-APR-15
Received Date: 07-APR-15
Extract Date: 13-APR-15
Extracted By: EME
Extraction Method: SW846 5030
Lab Prep Batch: WG161157

Analysis Date: 13-APR-15
Analyst: EME
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA
Report Date: 21-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
P-Bromofluorobenzene		96.1	%					
Toluene-d8		109.	%					
1,2-Dichloroethane-d4		118.	%					
Dibromofluoromethane		109.	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-1
Client ID: VWAE-MW03-0315
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5640.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776

Analysis Date: 06-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	UL	0.094	ug/L	1	.2	0.19	0.060	0.094
2-Methylnaphthalene	U	0.094	ug/L	1	.2	0.19	0.073	0.094
2-Methylnaphthalene-D10		61.4	%					
Fluorene-D10		49.9	%					
pyrene-d10		109.	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-3
Client ID: VWAE-MW04-0315
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5643.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776

Analysis Date: 07-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	UL	0.094	ug/L	1	.2	0.19	0.060	0.094
2-Methylnaphthalene	J	0.13	ug/L	1	.2	0.19	0.073	0.094
2-Methylnaphthalene-D10		48.7	%					
Fluorene-D10		48.4	%					
pyrene-d10		75.5	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-4
Client ID: VWAE-MW01-0315
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5644.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776

Analysis Date: 07-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	~~UL~~ JFD	0.094	ug/L	1	.2	0.19	0.060	0.094
2-Methylnaphthalene		0.20	ug/L	1	.2	0.19	0.073	0.094
2-Methylnaphthalene-D10		68.5	%					
Fluorene-D10		30.8	%					
pyrene-d10		66.2	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-5
Client ID: VWAE-MW01P-0315
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5645.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776

Analysis Date: 07-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	~~UL~~	0.094	ug/L	1	.2	0.19	0.060	0.094
2-Methylnaphthalene	~~U~~ UJFD	0.094	ug/L	1	.2	0.19	0.073	0.094
2-Methylnaphthalene-D10		55.7	%					
Fluorene-D10		59.2	%					
pyrene-d10		69.9	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2007-6
Client ID: VWAE-EB01-033115-GW
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5646.D

Sample Date: 31-MAR-15
Received Date: 01-APR-15
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776

Analysis Date: 07-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	UL	0.094	ug/L	1	.2	0.19	0.060	0.094
2-Methylnaphthalene	U	0.094	ug/L	1	.2	0.19	0.073	0.094
2-Methylnaphthalene-D10		64.5	%					
Fluorene-D10		46.1	%					
pyrene-d10		101.	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2039-1
Client ID: VWAE-MW08-0415
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5656.D

Sample Date: 01-APR-15
Received Date: 02-APR-15
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776

Analysis Date: 07-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	UL/U5CCH	0.095	ug/L	1	.2	0.19	0.061	0.095
2-Methylnaphthalene	U	0.095	ug/L	1	.2	0.19	0.073	0.095
2-Methylnaphthalene-D10		65.5	%					
Fluorene-D10		53.5	%					
pyrene-d10		92.2	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2039-2
Client ID: VWAE-MW05-0415
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5658.D

Sample Date: 01-APR-15
Received Date: 02-APR-15
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776

Analysis Date: 07-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	UL V5CH	0.096	ug/L	1	.2	0.19	0.062	0.096
2-Methylnaphthalene		0.20	ug/L	1	.2	0.19	0.074	0.096
2-Methylnaphthalene-D10	*	41.5	%					
Fluorene-D10		38.5	%					
pyrene-d10		96.4	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2039-3
Client ID: VWAE-EB01-040115-GW
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5657.D

Sample Date: 01-APR-15
Received Date: 02-APR-15
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776

Analysis Date: 07-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	~~UL~~ UJ CH	0.099	ug/L	1	.2	0.20	0.063	0.099
2-Methylnaphthalene	U	0.099	ug/L	1	.2	0.20	0.076	0.099
2-Methylnaphthalene-D10		70.3	%					
Fluorene-D10		56.8	%					
pyrene-d10		85.2	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2122-1
Client ID: VWAE-MW07-0415
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5762.D

Sample Date: 06-APR-15
Received Date: 07-APR-15
Extract Date: 10-APR-15
Extracted By: HG
Extraction Method: SW846 3510
Lab Prep Batch: WG161015

Analysis Date: 13-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	UL	0.095	ug/L	1	.2	0.19	0.061	0.095
2-Methylnaphthalene	U	0.095	ug/L	1	.2	0.19	0.073	0.095
2-Methylnaphthalene-D10		59.9	%					
Fluorene-D10		57.5	%					
pyrene-d10		113.	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2122-1RE
Client ID: VWAE-MW07-0415
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5816.D

Sample Date: 06-APR-15
Received Date: 07-APR-15
Extract Date: 15-APR-15
Extracted By: KF
Extraction Method: SW846 3510
Lab Prep Batch: WG161235

Analysis Date: 16-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 20-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	~~U~~ XRE	0.095	ug/L	1	.2	0.19	0.061	0.095
2-Methylnaphthalene	~~U~~ XRE	0.095	ug/L	1	.2	0.19	0.073	0.095
2-Methylnaphthalene-D10		59.2	%					
Fluorene-D10		69.5	%					
pyrene-d10		96.7	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2122-3
Client ID: VWAE-EB01-040615GW
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5763.D

Sample Date: 06-APR-15
Received Date: 07-APR-15
Extract Date: 10-APR-15
Extracted By: HG
Extraction Method: SW846 3510
Lab Prep Batch: WG161015

Analysis Date: 13-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 28-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	UL	0.096	ug/L	1	.2	0.19	0.062	0.096
2-Methylnaphthalene	U	0.096	ug/L	1	.2	0.19	0.074	0.096
2-Methylnaphthalene-D10		58.0	%					
Fluorene-D10		64.6	%					
pyrene-d10		99.5	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SI2122-3RE
Client ID: VWAE-EB01-040615GW
Project: CTO 013 Vieques AOC E
SDG: AOCE-1
Lab File ID: N5817.D

Sample Date: 06-APR-15
Received Date: 07-APR-15
Extract Date: 15-APR-15
Extracted By: KF
Extraction Method: SW846 3510
Lab Prep Batch: WG161235

Analysis Date: 16-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 20-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Naphthalene	U XRE	0.10	ug/L	1	.2	0.20	0.065	0.10
2-Methylnaphthalene	U	0.10	ug/L	1	.2	0.20	0.078	0.10
2-Methylnaphthalene-D10		66.0	%					
Fluorene-D10		68.1	%					
pyrene-d10		93.0	%					

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05/7/15

Data Completeness

The data package was received complete and intact. Resubmissions were not required. (SW846 Method 8260C with Region II SOP #HW-24, Revision 4)

Laboratory: Katahdin

Holding Times

Sampling Date: 3/31-4/6/15
Received Date: 4/1-7/15
Analysis Dates: 4/2-13/15
Cooler Temp: 2.7-5.0°C

All holding time requirements were met.

Calibrations

Mass assignments were verified by the injection of BFB.

No qualifications were required for the initial and continuing calibrations.

Internal Standards

All ceria were met.

Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying criteria.
- Qualification/Action codes where applied as stated in table below:

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Field	Detects	Not detected	No qualifications
	< LOD*	< LOD*	Report LOD value with a U
		≥ LOD*	Use professional judgment
	> LOD*	< LOD*	Report LOD value with a U
		≥ LOD* and < blank concentration	Report the concentration for the sample with a U, or qualify the data as unusable R
		≥ LOD* and ≥ blank concentration	Use professional judgment
	= LOD*	< LOD*	Report LOD value with a U
		≥ LOD*	Use professional judgment
	Gross contamination	Detects	Qualify results as unusable R

*2x the LOD for methylene chloride, 2-butanone and acetone

No contamination was exhibited in the method. Associated QC blanks: VWAE-TB01-03315, VWAE-TB01-040115, VWAE-TB01-040615- trip blank (no positive results) and VWAE-EB01-03315-GW, VWAE-EB01-040115-GW, VWAE-EB01-040615-GW- equipment blank (no positive results).

Blank Contamination and Qualification Summaries

Blank ID	Compound	Concentration	Reporting Limit (LOD)

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code

Surrogates

Sample VWAE-MW03-0315 exhibited low recovery for dibromofluoromethane at 15.6% (QC limit 85-115%). The MS/MSD was associated with this sample and also exhibited low reveries for this surrogate no re-analysis was performed. Qualify results as estimated (J/UJ), qualifier code SSL.

Laboratory Control Sample

All criteria were met.

Matrix Spike/Spike Duplicate Samples

An MS/MSD was submitted for sample VWAE-MW03-0315. High recvoeries were exhibited for benzene in both the MS and MSD at 126% and 129% (QC limit 80-120%). No positive results were exhibited in the sampls therefore no qualifications were required.

Field Duplicate Sample

A field duplicate was submitted for sample VWAE-MW01-0315- no qualifications were required, see attached sheets.

Specific Comments:

All sample results were reported within the calibration range of the instruments. Detection limits were acceptable. Raw data and calculations were verified.

We have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Validator Signature: L Marcellaz **Date:** 5/17/15

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services
Lab Code: KAS

Project: CTO 013 Vieques AOC E
SDG: AOCE-1

Matrix: AQ

Client Sample ID	Lab Sample ID	Col. ID	BFB	#	DBF	#	DCA	#	TOL	#
VWAE-MW03-0315	SI2007-1		91.2		15.6	*	87.3		85.5	
VWAE-TB01-033115	SI2007-2		95.7		99.7		89.6		88.5	
VWAE-MW04-0315	SI2007-3RA		86.9		88.3		88.3		94.0	
VWAE-MW01-0315	SI2007-4		101.		106.		96.8		92.8	
VWAE-MW01P-0315	SI2007-5RA		87.9		87.1		84.4		93.6	
VWAE-EB01-033115-GW	SI2007-6		92.8		96.4		87.5		86.7	
VWAE-MW08-0415	SI2039-1		85.0		87.1		83.0		94.1	
VWAE-MW05-0415	SI2039-2		85.2		91.0		86.6		92.7	
VWAE-EB01-040115-GW	SI2039-3		85.2		91.1		86.7		92.3	
VWAE-TB01-040115	SI2039-4		86.5		92.2		85.3		95.0	
VWAE-MW07-0415	SI2122-1		98.0		108.		120.		110.	
VWAE-TB01-040615	SI2122-2		98.5		106.		116.		111.	
VWAE-EB01-040615GW	SI2122-3		96.1		109.		118.		109.	
Laboratory Control S	WG160660-1		95.5		95.6		82.5		86.9	
Method Blank Sample	WG160660-2		88.6		93.1		83.0		84.8	
Matrix Spike	WG160660-5		92.2		0.494	*	82.1		86.4	
Matrix Spike Duplica	WG160660-6		93.5		0.180	*	81.9		88.7	
Laboratory Control S	WG160803-1		87.0		86.7		79.7		93.4	
Method Blank Sample	WG160803-2		84.1		91.1		83.8		91.8	
Laboratory Control S	WG161157-1		94.9		96.8		102.		105.	
Method Blank Sample	WG161157-2		95.4		103.		112.		109.	

		QC Limits
DCA	1,2-DICHLOROETHANE-D4	70-120
BFB	P-BROMOFLUOROBENZENE	75-120
DBF	DIBROMOFLUOROMETHANE	85-115
TOL	TOLUENE-D8	85-120

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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MS/MSD Recovery Report

MS ID: WG160660-5
MSD ID: WG160660-6
Sample ID: SI2007-1
Client ID: VWAE-MW03-0315
Project:
SDG: AOCE-1
MS File ID: D1416.D

Received Date:
Extract Date: 02-APR-15
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG160660
Report Date: 21-APR-15
MSD File ID: D1417.D

Analysis Date: 02-APR-15
Analyst: REC
Analysis Method: SW846 8260C
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
lethyl tert-butyl Ether	100.	100.	ug/L	U0.50	103.	105.	103.	105.	2	30	65-125
enzene	50.0	50.0	ug/L	JMM0.5(	63.0	64.7	126.*	129.*	3	30	80-120
,2-Dichloroethane	50.0	50.0	ug/L	U0.50	54.5	53.3	109.	107.	2	30	70-130
ylenes (Total)	150.	150.	ug/L	U1.5	170.	172.	113.	115.	1	30	80-120
1+P-Xylenes	100.	100.	ug/L	U1.0	115.	116.	115.	116.	1	30	75-130
)-Xylene	50.0	50.0	ug/L	U0.50	54.8	56.2	110.	112.	2	30	80-120
-Bromofluorobenzene							92.2	93.5			75-120
oluene-d8							86.4	88.7			85-120
2-Dichloroethane-d4							82.1	81.9			70-120
ibromofluoromethane							0.494*	0.180*			85-115

MQ in assoc sample - no qual

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DataQual **VOA**

FIELD DUPLICATE SAMPLE SUMMARY

Sample ID: VWAE-MW01-0315
Duplicate Sample ID: VWAE-MW01P-0315

Water: RPD>20%
Soil: RPD>30%

Compound	Sample Conc.	Dup. Sample Conc.	%RPD
methyl tert-butyl ether	23	21	9
benzene	2.1	1.9	10
1,2-dichloroethane	4.4	3.9	12
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
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			#DIV/0!
			#DIV/0!
			#DIV/0!

COMMENTS: No qualifications

* one of the results below the LOD
if both results are below the LOD the results are not compared

Data Completeness

The data package was received complete and intact. Resubmissions were not required. (SW846 Method 8270 with Region II SOP #HW-35, Revision 2)

Laboratory: Katahdin

Holding Times

Sampling Date: 3/31-4/6/15
Received Date: 4/1-7/15
Extraction Date: 4/6-15/15
Analysis Dates: 4/6-16/15
Cooler Temp: 2.7-5.0°C

All holding time requirements were met. Samples VWAE-MW07-0415RE and VWAE-EB01-040615-GWre were re-extracted on 4/15/15 out of holding however the samples were not used.

Calibrations

Mass assignments were verified by the injection of DFTPP.
No qualifications were required for the initial calibrations. High %D exhibited in the continuing calibration, see attached forms.

Internal Standards
No qualifications.

Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying criteria.
- Qualification/Action codes where applied as stated in table below:

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Field	Detects	Not detected	No qualifications
	< LOD*	< LOD*	Report LOD value with a U
		≥ LOD*	Use professional judgment
	> LOD*	< LOD*	Report LOD value with a U
		≥ LOD* and < blank concentration	Report the concentration for the sample with a U, or qualify the data as unusable R
		≥ LOD* and ≥ blank concentration	Use professional judgment
	= LOD*	< LOD*	Report LOD value with a U
		≥ LOD*	Use professional judgment
	Gross contamination	Detects	Qualify results as unusable R

*2x the LOD for methylene chloride, 2-butanone and acetone

No contamination was exhibited in the method blank. Associated QC blanks: VWAE-EB01-03315-GW, VWAE-EB01-040115-GW, VWAE-EB01-040615-GW- equipment blank (no positive results).

Blank Contamination and Qualification Summaries

Blank ID	Compound	Concentration	Reporting Limit (LOD)

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code

Surrogates

No qualifications required.

Laboratory Control Sample

No qualifications-no compounds out of criteria for both LCS and LCSD.

Matrix Spike/Spike Duplicate Samples

An MS/MSD was submitted for sample VWAE-MW03-0315-no qualifications were required.

Field Duplicate Sample

A field duplicate was submitted for sample VWAE-MW01-0315- qualifications were required, see attached sheets.

Specific Comments:

All sample results were reported within the calibration range of the instruments. Detection limits were acceptable. Raw data and calculations were verified.

Samples VWAE-MW07-0415 and VWAE-EB01-040615-GW were re-extracted and re-analyzed due to non-compliant LCS recoveries naphthalene. The associated LCSD exhibited recovery within criteria for naphthalene. The samples were re-extracted out of holding time and therefore were excluded.

We have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Validator Signature: _____ **Date:** 5/18/15

Form 5
Semivolatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : CTO 013 Vieques AOC E
Lab File ID : ND915.D
Instrument ID : GCMS-N

SDG : AOCE-1
Date Analyzed : 07-APR-15
Time Analyzed : 11:22

m/e	Ion Abundance Criteria	% Relative Abundance		
51	30.0 - 60.0% of mass 198	41.6		
68	Less than 2.0% of mass 69	0.7	1.71	1
69	Less than 100.0% of mass 198	42.7		
70	Less than 2.0% of mass 69	0.3	0.67	1
127	40.0 - 60.0% of mass 198	56.5		
197	Less than 1.0% of mass 198	0.3		
198	Base Peak, 100% relative abundance	100		
199	5.0 - 9.0% of mass 198	6.6		
275	10.0 - 30.0% of mass 198	22.8		
365	1.0 - 100.0% of mass 198	2.3		
441	0.0 - 100.0% of mass 443	9.9	77.38	2
442	40.0 - 100.0% of mass 198	67.7		
443	17.0 - 23.0% of mass 442	12.8	18.87	3

1-Value is % mass 69
2-Value is % mass 443
3-Value is % mass 442

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Continuing Calibrati	WG160827-2	N5652.D	04/07/15	11:41
VWAE-MW08-0415	SI2039-1	N5656.D	04/07/15	13:31
VWAE-EB01-040115-GW	SI2039-3	N5657.D	04/07/15	13:59
VWAE-MW05-0415	SI2039-2	N5658.D	04/07/15	14:27

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : CTO 013 Vieques AOC E
Lab ID : WG160827-2
Lab File ID : N5652.D
Initial Calibration Date(s): 04/06/15 14:51 04/06/15 17:11

SDG: AOCE-1
Analytical Date: 04/07/15 11:41
Instrument ID: GCMS-N
Column ID:

Compound	RRF/Amount	RF1	CCAL RRF1	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
3 Naphthalene	1.00000	0.73329	0.91314	0.010	-26.67088	20.00000	Quadratic	*
5 2-Methylnaphthalene	1.00000	0.81559	0.55474	0.010	-18.44122	20.00000	Quadratic	
4 2-Methylnaphthalene-D10	0.94532	1.03083	1.03083	0.010	9.04489	20.00000	Averaged	
10 Fluorene-D10	0.82642	0.85086	0.85086	0.010	2.95685	20.00000	Averaged	
16 Pyrene-D10	1.28638	1.23255	1.23255	0.010	-4.18422	20.00000	Averaged	

*** = Compound out of QC criteria**

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services
Lab Code: KAS

Project: CTO 013 Vieques AOC E
SDG: AOCE-1

Matrix: AQ

Client Sample ID	Lab Sample ID	Col. ID	2MN	#	FLO	#	PYR	#
VWAE-MW03-0315	SI2007-1		61.4		49.9		109.	
VWAE-MW04-0315	SI2007-3		48.7		48.4		75.5	
VWAE-MW01-0315	SI2007-4		68.5		30.8		66.2	
VWAE-MW01P-0315	SI2007-5		55.7		59.2		69.9	
VWAE-EB01-033115-GW	SI2007-6		64.5		46.1		101.	
VWAE-MW08-0415	SI2039-1		65.5		53.5		92.2	
VWAE-MW05-0415	SI2039-2		41.5	*	38.5		96.4	
VWAE-EB01-040115-GW	SI2039-3		70.3		56.8		85.2	
VWAE-MW07-0415	SI2122-1		59.9		57.5		113.	
VWAE-MW07-0415	SI2122-1RE		59.2		69.5		96.7	
VWAE-EB01-040615GW	SI2122-3		58.0		64.6		99.5	
VWAE-EB01-040615GW	SI2122-3RE		66.0		68.1		93.0	
Method Blank Sample	WG160776-1		71.5		57.9		107.	
Laboratory Control S	WG160776-2		58.1		50.0		94.1	
Laboratory Control S	WG160776-3		54.8		48.2		84.6	
Matrix Spike	WG160776-4		70.4		57.6		93.1	
Matrix Spike Duplica	WG160776-5		64.0		52.3		87.8	
Method Blank Sample	WG161015-1		80.5		59.3		87.9	
Laboratory Control S	WG161015-2		61.2		46.5		94.2	
Laboratory Control S	WG161015-3		67.2		48.3		100.	
Method Blank Sample	WG161235-1		64.9		78.8		77.5	
Laboratory Control S	WG161235-2		70.8		47.4		83.6	
Laboratory Control S	WG161235-3		75.4		48.0		97.7	

		QC Limits
2MN	2-METHYLNAPHTHALENE-D10	43-92
FLO	FLUORENE-D10	29-101
PYR	PYRENE-D10	53-166

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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MS/MSD Recovery Report

MS ID: WG160776-4
MSD ID: WG160776-5
Sample ID: SI2007-1
Client ID: VWAE-MW03-0315
Project:
SDG: AOCE-1
MS File ID: N5641.D

Received Date:
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776
Report Date: 20-APR-15
MSD File ID: N5642.D

Analysis Date: 06-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
laphthalene	1.92	1.89	ug/L	U0.094	0.87	0.76	45.3	40.3	14	30	40-100
-Methylnaphthalene	1.92	1.89	ug/L	U0.094	1.2	1.2	64.0	62.5	4	30	45-105
-Methylnaphthalene-D10							70.4	64.0			43-92
luorene-D10							57.6	52.3			29-101
yrene-d10							93.1	87.8			53-166

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044

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : CTO 013 Vieques AOC E
Lab ID : WG160679-4
Lab File ID : N5622.D

SDG: AOCE-1
Analytical Date: 04/06/15 14:51
Instrument ID: GCMS-N

		1,4-DICHLOROBENZENE-D4		NAPHTHALENE-D8		ACENAPHTHENE-D10	
		Area	# RT #	Area	# RT #	Area	# RT #
	Std .	42634	4.79	161917	6.11	69220	8.19
	Upper Limit	85268	5.29	323834	6.61	138440	8.69
	Lower Limit	21317	4.29	80958.5	5.61	34610	7.69
Client Sample ID	Lab Sample ID						
Method Blank Sample	WG160776-1	35274	4.74	117254	6.12	55975	8.18
Laboratory Control S	WG160776-2	49889	4.74	144581	6.10	80071	8.18
Laboratory Control S	WG160776-3	55692	4.74	164911	6.10	83019	8.18
VWAE-MW03-0315	SI2007-1	40548	4.74	123217	6.10	79502	8.18
Matrix Spike	WG160776-4	54001	4.74	175459	6.10	83887	8.18
Matrix Spike Duplica	WG160776-5	40427	4.74	117970	6.10	71366	8.18
VWAE-MW04-0315	SI2007-3	46359	4.74	168303	6.10	79877	8.18
VWAE-MW01-0315	SI2007-4	56750	4.74	182327	6.10	86259	8.18
VWAE-MW01P-0315	SI2007-5	40268	4.74	147224	6.10	84819	8.18
VWAE-EB01-033115-(	SI2007-6	40693	4.74	121996	6.12	79348	8.18
Continuing Calibrati	WG160827-2	41525	4.79	160355	6.11	66252	8.19
VWAE-MW08-0415	SI2039-1	38846	4.74	117000	6.11	72402	8.18
VWAE-EB01-040115-(	SI2039-3	41740	4.74	115263	6.12	67605	8.18
VWAE-MW05-0415	SI2039-2	70650	4.74	218679	6.10	190105 *	8.18
Continuing Calibrati	WG161003-2	40582	4.79	144419	6.11	70893	8.18
Method Blank Sample	WG161015-1	40385	4.72	159903	6.10	65820	8.18
Laboratory Control S	WG161015-2	47085	4.72	156836	6.08	94352	8.16
Laboratory Control S	WG161015-3	48424	4.72	164670	6.08	93447	8.16
VWAE-MW07-0415	SI2122-1	30009	4.72	131206	6.10	66178	8.18
VWAE-EB01-040615C	SI2122-3	22606	4.74	102110	6.11	52685	8.18

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 0.50 minutes of internal standard RT
RT Lower Limit = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Not target compds assoc'd No Qual

045

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : CTO 013 Vieques AOC E
Lab ID : WG161277-4
Lab File ID : N5806.D

SDG: AOCE-1
Analytical Date: 04/16/15 10:53
Instrument ID: GCMS-N

		1,4-DICHLOROBENZENE-D4		NAPHTHALENE-D8		ACENAPHTHENE-D10	
		Area #	RT #	Area #	RT #	Area #	RT #
	Std .	60290	4.76	193817	6.10	88413	8.16
	Upper Limit	120580	5.26	387634	6.60	176826	8.66
	Lower Limit	30145	4.26	96908.5	5.60	44206.5	7.66
Client Sample ID	Lab Sample ID						
Method Blank Sample	WG161235-1	39367	4.71	124359	6.10	68431	8.16
Laboratory Control S	WG161235-2	55892	4.71	141271	6.07	76071	8.14
Laboratory Control S	WG161235-3	50837	4.71	133207	6.07	78396	8.14
VWAE-MW07-0415	SI2122-1RE	29535 *	4.71	116463	6.10	65315	8.16
VWAE-EB01-040615C	SI2122-3RE	43542	4.71	166242	6.10	73116	8.16

Not used

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 0.50 minutes of internal standard RT
RT Lower Limit = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

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LCS/LCSD Recovery Report

LCS ID: WG160776-2
LCSD ID: WG160776-3
Project:
SDG: AOCE-1
Report Date: 20-APR-15
LCS File ID: N5634.D

Received Date:
Extract Date: 06-APR-15
Extracted By: WAS
Extraction Method: SW846 3510
Lab Prep Batch: WG160776
LCSD File ID: N5635.D

Analysis Date: 06-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
[aphthalene	2.00	0.820	41.0	0.747	37.4*	ug/L	9	30	40-100
-Methylnaphthalene	2.00	1.19	59.5	1.09	54.5	ug/L	9	30	45-105
-Methylnaphthalene-D10			58.1		54.8				43-92
luorene-D10			50.0		48.2				29-101
yrene-d10			94.1		84.6				53-166

No qual
LCS in

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LCS/LCSD Recovery Report

LCS ID: WG161015-2
LCSD ID: WG161015-3
Project:
SDG: AOCE-1
Report Date: 28-APR-15
LCS File ID: N5757.D

Received Date:
Extract Date: 10-APR-15
Extracted By: HG
Extraction Method: SW846 3510
Lab Prep Batch: WG161015
LCSD File ID: N5758.D

Analysis Date: 13-APR-15
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
aphthalene	2.00	0.774	38.7*	0.842	42.1	ug/L	8	30	40-100
-Methylnaphthalene	2.00	1.24	62.0	1.35	67.5	ug/L	8	30	45-105
-Methylnaphthalene-D10			61.2		67.2				43-92
luorene-D10			46.5		48.3				29-101
yrene-d10			94.2		100.				53-166

No qual
LCSD in

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

043

DataQual **SVOA**

FIELD DUPLICATE SAMPLE SUMMARY

Sample ID: VWAE-MW01-0315
Duplicate Sample ID: VWAE-MW01P-0315

Water: RPD>20%
Soil: RPD>30%

Compound	Sample Conc.	Dup. Sample Conc.	%RPD
2-methylnaphthalene	0.2		200
			#DIV/0!
			#DIV/0!
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COMMENTS: Qualifiy as estimated

* one of the results below the RL
if both results are below the RL the results are not compared

Katahdin ANALYTICAL SERVICES

nelac Cert. No. E87604

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
CH2M HILL
CTO 013 VIEQUES AOC E
SDG: AOCE-1
SI2007, SI2039, & SI2122

Sample Receipt

The following samples were received on April 01, 02, and 07, 2015 and were logged in under Katahdin Analytical Services work order numbers SI2007, SI2039, and SI2122 for a hardcopy due date of May 04, 2015.

KATAHDIN Sample No.	CH2MHILL Sample Identification
SI2007-1	VWAE-MW03-0315
SI2007-2	VWAE-TB01-033115
SI2007-3	VWAE-MW04-0315
SI2007-4	VWAE-MW01-0315
SI2007-5	VWAE-MW01P-0315
SI2007-6	VWAE-EB01-033115-GW
SI2039-1	VMAE-MW08-0415
SI2039-2	VMAE-MW05-0415
SI2039-3	VMAE-EB01-040115-GW
SI2039-4	VMAE-TB01-040115
SI2122-1	VWAE-MW07-0415
SI2122-2	VWAE-TB01-040615
SI2122-3	VWAE-EB01-040615GW

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAC standards unless otherwise noted in this narrative or in the Report of Analysis.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Mrs. Jennifer Obrin**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of SDG AOCE-1 were analyzed in accordance with "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods." SW-846, 2nd edition, 1982 (revised 1984), 3rd edition, 1986, and Updates I, II, IIA, III, IIIA, and IIIB 1996, 1998 & 2004, Office of Solid Waste and Emergency Response, U.S. EPA, and/or for the specific methods listed below or on the Report of Analysis.

Sample SI2007-1 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as requested by the client.

8260B Analysis

Sample SI2039-2 was manually integrated for the target analyte 1,2-dichloroethane. The specific reasons for the manual integrations are indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

Sample SI2007-1 and the MS/MSD WG160660-5 and 6 had low recoveries for the surrogate p-bromofluorobenzene that were outside of the DoD QSM acceptance limits. Since sample SI2007-1 is the native sample for the MS/MSD and the surrogate deviations confirm a matrix effect, the samples were not reanalyzed.

The reported percent recovery acceptance limits for the Laboratory Control Samples (LCSs) are based on DoD QSM acceptance limits for the full list of spiked compounds and laboratory established acceptance limits for all other analytes. The recoveries of the spiked analytes in the LCS, Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are compared to these acceptance limits. Katahdin standard operating procedure is to take corrective action only if the number of spiked analytes in the LCS that are outside of the QC limits is greater than the DoD QSM allowable number of exceedances. If the associated MS/MSD has greater than the allowable number of exceedances, no corrective action is taken, as long as the LCS is acceptable.

The CV (file D1425) had a low response for the surrogate 1,2-dichloroethane-d4, which resulted in a %D that was greater than the DoD QSM acceptance limit of 20%.

8270D SIM Analysis

Samples SI2007-3 and SI2039-2 were manually integrated for the analytes 2-methylnaphthalene and/or the surrogate 2-methylnaphthalene-d10. The specific reason for the manual integration is indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

Sample SI2039-2 had a low recovery for one surrogate, which was outside the laboratory established acceptance limits. Based on the sample chromatogram and that the laboratory reported difficulties during the extraction process, the deviation is likely attributable to a matrix effect. Therefore the sample was not reextracted.

The independent check standard (file N5628), associated with the initial calibration on the N instrument on 04/06/2015, had a low concentration for the target analyte naphthalene, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. The Independent Check Report consists of the full list of spiked analytes, but only the client's list of target analytes are evaluated.

In the initial calibration analyzed on the N instrument on 04/16/2015, the target analyte naphthalene failed for both the linear and quadratic models in the initial calibration curve due to the correlation coefficient and the coefficient of determination being less than the method acceptance criteria of 0.995 and 0.990 respectively. This compound was calibrated using the average model.

The CV (file N5652) had a low response for the target analyte naphthalene which resulted in a %D that was greater than the DoD QSM acceptance limit of 20%.

The reported percent recovery acceptance limits for the Laboratory Control Samples (LCSs) are statistically derived for the full list of spiked compounds. The recoveries of the spiked analytes in the LCS, Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are compared to these acceptance limits. Katahdin standard operating procedure is to take corrective action only if the number of spiked analytes in the LCS that are outside of the QC limits is greater than ten percent of the client compound list. If the associated MS/MSD has greater than the allowable number of exceedances, no corrective action is taken, as long the LCS is acceptable.

The LCSD WG160776-3 had a low recovery for the spiked target analyte naphthalene that was outside of the DoD QSM acceptance limits. Since the LCS WG160776-2 was acceptable, no further action was taken.

The LCS WG161015-2 had a low recovery for the spiked target analyte naphthalene that was outside of the DoD QSM acceptance limits. The two associated samples were reextracted two days outside of hold time, and the associated LCS/LCSD had acceptable spike recoveries. The results from both extractions are reported.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Operations Manager or the Quality Assurance Officer as verified by the following signature.

Leslie Dimond
05.01.15
Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Sample Receipt Condition Report

Client: CH2MHill	KAS PM: JO	Sampled By: Client	
Project:	KIMS Entry By: GN	Delivered By: FedEx	
KAS Work Order#: 51 2007	KIMS Review By: [signature]	Received By: AP	
SDG #:	Cooler: 1 of 2	Date/Time Rec.: 4/1/15 0930	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 2.7
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals analysis.
Ice packs or ice present?	✓				
If yes, was there sufficient ice to meet temperature requirements?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				✓	
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments

Katahdin Analytical Services, Inc.

Sample Receipt Condition Report

Client: CH2MHill		KAS PM: JO	Sampled By: Client
Project:		KIMS Entry By: GV	Delivered By: FedEx
KAS Work Order#: 512007		KIMS Review By:	Received By: GV
SDG #:	Cooler: 2 of 2		Date/Time Rec.: 4-1-15/0930

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 3.8
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓			NA	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				✓	
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments

Katahdin Analytical Services, Inc.

Sample Receipt Condition Report

Client: CH2M Hill	KAS PM: JO	Sampled By: Client	
Project:	KIMS Entry By: GN	Delivered By: FedEx	
KAS Work Order#: 5I2039	KIMS Review By:	Received By: GN	
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 4-2-15 / 09:15	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.		✓			Temp (°C): 5.0
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals analysis.
Ice packs or ice present?	✓				
If yes, was there sufficient ice to meet temperature requirements?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓			✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				✓	
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments

Katahdin Analytical Services, Inc.

Sample Receipt Condition Report

Client: CH2MHill		KAS PM: JD	Sampled By: Clnt
Project:		KIMS Entry By: GV	Delivered By: FedEx
KAS Work Order#: 512122		KIMS Review By:	Received By: GV
SDG #:	Cooler: 1 of 1		Date/Time Rec.: 4-7-15/09:30

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 3.2
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓			✓	
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments

Katahdin ANALYTICAL SERVICES
600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Page ____ of ____

Client: CH2MHILL	Contact: Mike Zamboni	Phone #: (703) 376-5301	Fax #: ( )
Address: 5701 Cleveland Street	City: Virginia Beach	State: VA	Zip Code:
Purchase Order #	Proj. Name / No.: AOC-E		Katahdin Quote #
Bill (if different than above)	Address		
Sampler (Print / Sign): Stephen Brand Stephen Brand			Copies To:

LAB USE ONLY — WORK ORDER #: 5I2007

KATAHDIN PROJECT NUMBER ____

REMARKS: ____

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO: ____

TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

★	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	ANALYSIS AND CONTAINER TYPE PRESERVATIVES: Filt. ☐Y ☐N — Select VOCs	Filt. ☐Y ☐N — Select SVOCs
DUP QA QC	VWAE-MW03-0315	03/31/15/ 0730	GW	5	3	2
	VWAE-MW03-0315-MS	03/31/15/ 0730	GW	5	3	2
	VWAE-MW03-0315-SD	03/31/15/ 0730	GW	5	3	2
	VWAE-TB01-033115	03/31/15/ 0815	W	3	3	
	VWAE-MW04-0315	03/31/15/ 1000	GW	~~3~~ 3	3	
	VWAE-MW01-0315	03/31/15/ 0900	GW	3	3	
	VWAE-MW01R-0315	03/31/15/ 0900	GW	3	3	
	VWAE-EB01-033115-GW	03/31/15/ 1220	GW	3	3	
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COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
Stephen Brand	03/31/15 1230	[signature]			
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN SERVICES, EXCEPT WHEN A SIGNED CONTRACTUAL AGREEMENT EXISTS.

000010

057

Katahdin ANALYTICAL SERVICES
600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Page ____ of ____

Client: CH2M Hill | Contact: Mike Zumboni | Phone #: (703) 376-5301 | Fax #: ( )

Address: 5701 Cleveland Street | City: Virginia Beach | State: VA | Zip Code: 23462

Purchase Order # | Proj. Name / No.: AOC-E | Katahdin Quote #

Bill (if different than above) | Address

Sampler (Print / Sign): Stephen Brand Stephen Brand | Copies To: Mike Zumboni

LAB USE ONLY | WORK ORDER #: 5I2007 | KATAHDIN PROJECT NUMBER

REMARKS:

SHIPPING INFO: ❒ FED EX ❒ UPS ❒ CLIENT

AIRBILL NO:

TEMP°C ____ ❒ TEMP BLANK ❒ INTACT ❒ NOT INTACT

★	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	ANALYSIS AND CONTAINER TYPE PRESERVATIVES: Filt. ❒Y ❒N — Select-VOCs
	VWAE-MW04-0315	03/31/15/1000	GW	2	2
	VWAE-MW01-0315	03/31/15/0900	GW	2	2
	VWAE-MW01P-0315	03/31/15/0900	GW	2	2
	VWAE-EB01-033115-GW	03/31/15/1220	GW	2	2
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COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
Stephen Brand	03/31/15 1230	4-1-15 09:3			
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN SERVICES, EXCEPT WHEN A SIGNED CONTRACTUAL AGREEMENT EXISTS.

000011
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Katahdin ANALYTICAL SERVICES
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Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Page ____ of ____

Client: CH2M Hill | Contact: Mike Zambrano | Phone #: (703) 376-5301 | Fax #: ( )

Address: 5701 Cleveland St | City: Virginia Beach | State: VA | Zip Code: 23462

Purchase Order # | Proj. Name / No.: AOC-E | Katahdin Quote #

Bill (if different than above) | Address

Sampler (Print / Sign): Stephen Brand *Stephen Brand* | Copies To:

LAB USE ONLY | WORK ORDER #: SI2039

KATAHDIN PROJECT NUMBER

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	ANALYSIS AND CONTAINER TYPE PRESERVATIVES: Filt. ☐Y ☒N — Select VOCs	Filt. ☐Y ☒N — Select SVOCs	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	VWAE-MW08-0415	040115/0900	W	5	3	2								
	VWAE-MW05-0415	040115/1000	W	5	3	2								
	VWAE-EB01-040115-GW	040115/1130	W	5	3	2								
	VWAETB01-040115	040115/1200	W	3	Ø3	Ø								
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COMMENTS

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Stephen Brand	04/9/15 1230	4-2-15 09:15			
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

000012
059

Katahdin ANALYTICAL SERVICES
600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Page 1 of 1

Client: CH2M | Contact: Mike Zambrini | Phone #: (703) 376-5301 | Fax #: ( )

Address: 5701 Cleveland St. | City: Virginia Beach | State: VA | Zip Code: 23462

Purchase Order # | Proj. Name / No.: AOC-E | Katahdin Quote #

Bill (if different than above) | Address

Sampler (Print / Sign): Stephen Brand Stephen Brand | Copies To:

LAB USE ONLY | WORK ORDER #: 5I2122 | KATAHDIN PROJECT NUMBER

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

★	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	ANALYSIS AND CONTAINER TYPE PRESERVATIVES: Filt. ☐Y ☒N Select VOCs	Filt. ☐Y ☒N Select SVOCs	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	VWAE-MW07-0415	04/06/15/1000	GW	5	3	2							
	VWAE-TB01-040615	040615/1130	W	3	3	0							
	VWAE-EB01-040615GW	040615/1200	W	5	3	2							
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COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
Stephen Brand	040615/1415				
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	/			/	